

49. The method of claim 48, wherein the CD33^{high} expressing cells comprise CD33^{hi}CD19-CD3-CD66b-CD56- cells or CD33^{hi}CD3-CD19-CD66b-CD56-HLA-DR+CD86+ cells.

50. The method of claim 48, wherein the CD33^{high} expressing cells comprise CD33^{hi}CD14^{dim}CD16⁺ monocytes or macrophages, CD33^{hi}CD14⁺CD16^{lo} monocytes or macrophages, intermediate CD33^{hi}CD14⁺CD16⁺ monocytes or macrophages, CD33^{hi}CD14^{hi}CD16⁻ monocytes or macrophages, CD33^{lo}CD14^{hi}CD16⁻ monocytes or macrophages, and CD33^{hi}CD14^{lo}CD16⁺ monocyte or macrophages.

51. The method of any one of claims 48-50, further comprising administering an effective amount of the treatment to the subject.

52. The method of any one of claims 47-51, wherein the treatment is selected from the group of: a first line treatment, a second line treatment, a third line treatment or a fourth line treatment.

53. The method of any one of claims 47-52, wherein the treatment is co-administered with an effective amount of a second therapy.

54. The method of claim 53, wherein the second therapy is administered prior to, concurrently or subsequently to the treatment.

55. The method of claim 53, wherein the second therapy comprises one or more of surgical resection, radiation therapy, light therapy, or a chemotherapy.

56. The method of any preceding claim, wherein the subject is a mammal.

57. The method of claim 56, wherein the mammal is of the group of: a canine, a feline, an equine, a bovine, an ovine, a murine, a rat, a simian or a human patient.

58. The method of any preceding claim, wherein the subject is a female.

59. The method of any preceding claim, wherein the subject is a male.

60. The method of any preceding claim, wherein the subject is a pediatric patient.

61. The method of claim 53, wherein the effective amount of the second therapy is a low dose therapy.

62. The method of claim 37, further comprising administering an effective amount of the same treatment or different therapy to the subject.

63. The method of claim 62, wherein administering an effective amount of the same treatment to the subject comprises administering a modified effective amount of the treatment.

64. A kit comprising reagents to detect or measure the presence or amount of CD33 or CD33 expressing cells in a biological sample and instructions for use in the methods of claims 1 to 63.

65. A kit comprising reagents to detect or measure the amount of CD33^{hi} and/or CD33^{low} expressing cells in a biological sample and instructions for use in the methods of claim 1 to 63.

66. The method of any one of claims 1 to 63, wherein the detecting or measuring is by a method comprising one or more of DNA microarrays, Real-time PCR, Chromatin immunoprecipitation (ChIP), flow cytometry, Western blotting, 2-D gel electrophoresis, immunoassays, or Fluorescence-activated cell sorting.

67. A method of treating a neoplasia, neoplastic disorder, tumor, cancer or malignancy in a subject, the method comprising modulating CD33 activity or expression in a myeloid cell.

68. The method of claim 67, wherein the method comprises modulating up CD33 activity or expression in a myeloid cell.

69. The method of claim 67, wherein the method comprises modulating down CD33 activity or expression in a myeloid cell.

70. The method of any of claims 67-69, wherein the method comprises modulating the amount of one or more of: CD33hiCD19-CD3-CD66b-CD56- cells, CD33hiCD3-CD19-CD66b-CD56-HLA-DR+CD86+ cells, CD33hiCD14dimCD16+ monocyte or macrophages, CD33hiCD14+CD16lo monocyte or macrophages, intermediate CD33hiCD14+CD16+ monocyte or macrophages, and/or CD33hiCD14loCD16+ monocyte or macrophages in the biological sample.

71. The method of any of claims 67-69, wherein the method comprises modulating the amount of one or more of: CD33loCD19-CD3-CD66b-CD56- cells, CD33loCD3-CD19-CD66b-CD56-HLA-DR+CD86+ cells, CD33loCD14dimCD16+ monocyte or macrophages, CD33loCD14+CD16lo monocyte or macrophages, intermediate CD33loCD14+CD16+ monocyte or macrophages, and/or CD33loCD14loCD16+ monocyte or macrophages in the biological sample.

72. The method of claim 67, wherein the method comprises administering an agent that modulates CD33 activity or expression.

73. The method of claim 72, wherein the agent is a small molecule, an antibody, a protein or a peptide.

74. The method of claim 72, wherein the agent is azacitidine, decitabine, or lintuzumab.

75. A method of treating a neoplasia, neoplastic disorder, tumor, cancer or malignancy in a subject, the method comprising administering a population of CD33hi monocytes or CD33hi macrophages.

76. The method of claim 75, wherein the CD33hi monocyte or macrophage population comprises one or more of: CD33hiCD19-CD3-CD66b-CD56- cells, CD33hiCD3-CD19-CD66b-CD56-HLA-DR+CD86+ cells, CD33hiCD14dimCD16+ monocyte or macrophages, CD33hiCD14+CD16lo monocyte or macrophages, intermediate CD33hiCD14+CD16+ monocyte or macrophages, and/or CD33hiCD14loCD16+ monocyte or macrophages in the biological sample.

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